Canandaigua Wine Company (PWS 3140224)
SOURCE WATER ASSESSMENT OPERATOR REPORT

RGT 3-30-04

May 17, 2004

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Federal Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. The Idaho Department of Environmental Quality (DEQ) is completing the assessments for all Idaho public drinking water systems. The assessment for the Canandaigua Wine Company drinking water source is based on a land use inventory within a 1,000-foot radius of the well source, sensitivity factors associated with the source, and characteristics associated with either your aquifer or watershed in which you live.

This report, Source Water Assessment for Canandaigua Wine Company (PWS # 3140224) describes the public drinking water system, the associated potential contaminant sources located within a 1,000 foot boundary around the drinking water source, and the susceptibility that may be associated with any associated potential contaminants. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this system. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the Canandaigua Wine Company water system.**

The Canandaigua Wine Company is located approximately 3 miles northeast of Marsing in Canyon County (see Figure 1). The non-community transient water system has one well that serves a population of approximately 25 people. Nitrate concentrations above the EPA maximum contaminant level (MCL) of 10 mg/L have been detected three times at the Canandaigua Wine Company. The nitrate levels have ranged from 11.4 mg/L to 12.5 mg/L and were detected on the following dates: April 30, 2001; April 26, 2002; and October 10, 2003.

The final susceptibility ranking for the well is high for inorganic chemical (IOC, e.g. nitrate), volatile organic chemical (VOC, e.g. petroleum products), synthetic organic chemical (SOC, e.g. pesticides), and microbial contaminants (e.g. bacteria) (see Table 2). The nitrate detections over the EPA MCL gave Canandaigua Wine Company an automatic high ranking for IOC chemicals. A copy of the susceptibility analysis for the Canandaigua Wine Company well along with a map showing potential contaminant sources are included with this summary. Information regarding the potential contaminants within the 1,000-foot boundary have been summarized and included in Table 1.

Potential Contamination

The potential contaminant sources identified within the delineated area include a canal and a road (see Table 1 and Figure 2). According to a letter from DEQ (Rae, 2001) a portable restroom is located within 50 feet of the well. The portable restroom is a source of IOC and microbial contaminants. If an accidental spill occurred into the canal or on the road IOC (e.g. nitrate), VOC (e.g. petroleum products), SOC (e.g. pesticides), and microbial (e.g. bacteria) could be added to the ground water. In addition, the land use in this area is predominantly irrigated agriculture with high agricultural chemical inputs.

Table 1. Canandaigua Wine Company Potential Contaminant Inventory

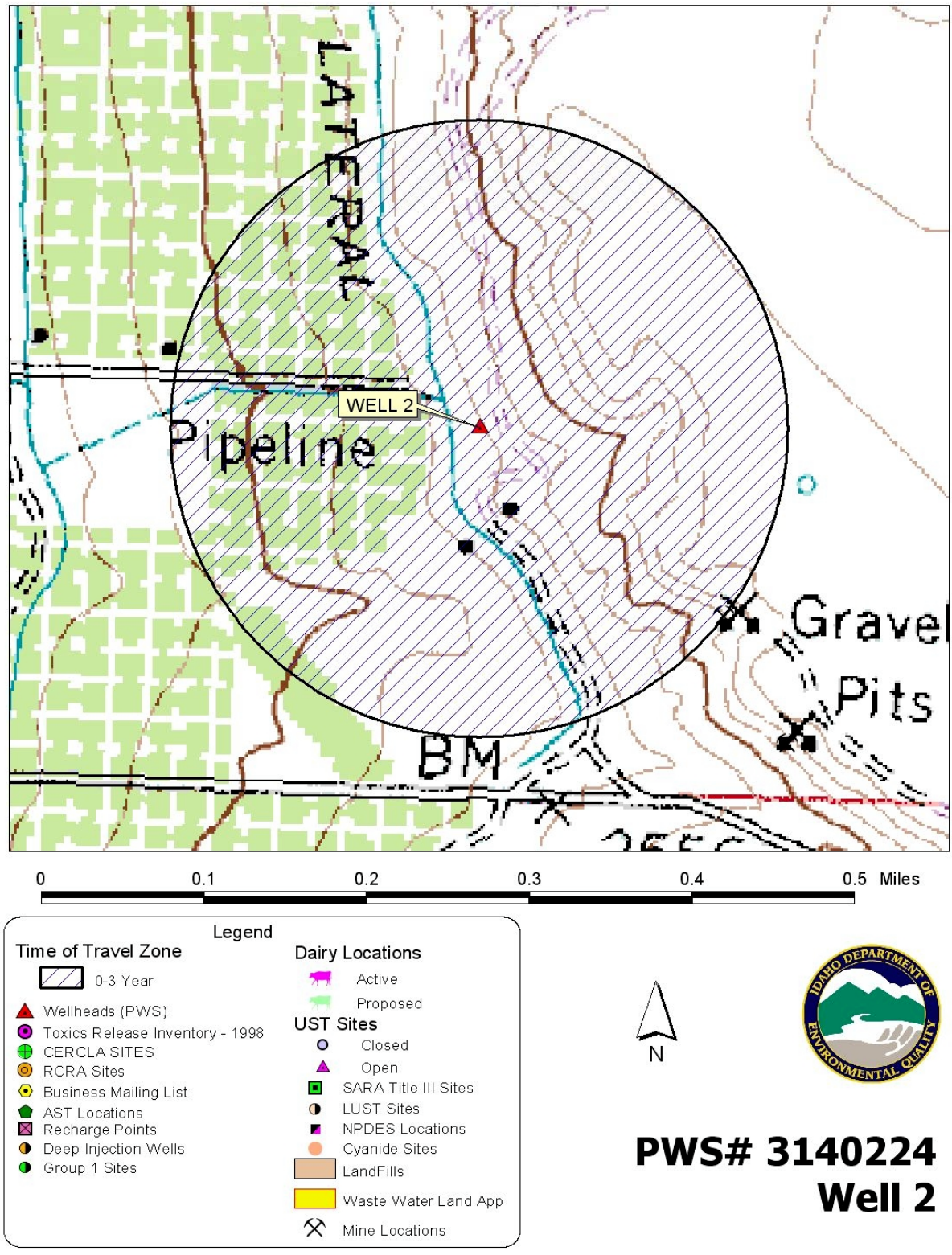
Source Description	Source of Information	Potential Contaminants[1]
Road	GIS Map	IOC, VOC, SOC, M
Canal	GIS Map	IOC, VOC, SOC, M
Portable Restroom	Rae, 2001	IOC, M

[1]IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical, M= microbial

Susceptibility Analysis

The susceptibility of the drinking water source to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity or system construction, the land use characteristics, and potentially significant contaminant sources. Final susceptibility scores are derived from equally weighting system construction scores, hydrologic sensitivity scores, and potential contaminant/land use scores. Therefore, a low rating in one or two categories coupled with a higher rating in another category(ies) results in a final rating of low, moderate, or high susceptibility. With the potential contaminants associated with most urban and heavily agricultural areas, the best score a well can get is moderate. Potential contaminants are divided into four categories, IOC (e.g. nitrates, arsenic) contaminants, VOC (e.g. petroleum products) contaminants, SOC (e.g. pesticides) contaminants, and microbial contaminants (e.g. bacteria). As different wells can be subject to various contamination settings, separate scores are given for each type of contaminant. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each drinking water source is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement.

Figure 2. Canandaigua Wine Company Delineation Map and Potential Contaminant Source Locations



The hydrologic sensitivity was rated moderate for the well. This rating is based upon moderate-to-well drained soil characteristics defined by the Natural Resource Conservation Service. The well is also rated moderate due to the depth to first ground water identified during drilling was from 125 to 138 feet below ground surface (bgs) in a sand layer, less than the 300 feet identified in the SWA Plan (DEQ, 1999) required to achieve a lower score. However, the presence of clay layers with a cumulative thickness of 65 feet in the subsurface provides a low-permeability barrier between possible surface contaminants and the water-producing zone, which is greater than the required 50 feet cumulative thickness identified in the SWA Plan to achieve a lower score (DEQ, 1999). In addition, the vadose zone is mainly composed of sand and clay, which also achieves a lower score according to the SWA Plan criteria (DEQ, 1999).

The well's system construction was rated high. The well was drilled in June of 2000 to a depth of 195 feet bgs. The static water level at the time of drilling was 105 feet bgs. The well log does not indicate the depth at which the well is screened. The well has a 6-inch diameter casing from the surface to 178 feet bgs. The well casing thickness is 0.250 of an inch. The required casing thickness is 0.280 of an inch for a well casing that is six inches in diameter (IDWR, 1993). The well's bentonite annular seal at the ground surface extends 18 feet bgs into non water-bearing sandy clay, however, using profession judgement, sandy clay is comprised mainly of sand and is not a low permeability unit. With respect to flooding vulnerability, the well is located outside a 100-year floodplain, however, the sanitary survey is not available and it is not known whether the wellhead is protected from surface runoff and if the surface seal is maintained in good condition. The conservative view was taken, and it was assumed that the surface seal is not maintained and that the well is not protected from surface runoff.

The Canandaigua Wine Company rated high (Table 2) for potential contaminant sources and land use for IOCs (e.g., nitrates) and microbial contamination (e.g., total coliform). The Canandaigua Wine Company rated moderate for VOCs (e.g., petroleum products) and SOCs (e.g., pesticides). The nitrate detections above the EPA MCL and the location of the portable restroom within 50 feet of the well automatically gave the potential contaminant source and land use score for IOCs a high ranking. The location of the portable restroom within 50 feet of the well also automatically gave the potential contaminant source and land use score for microbial contamination a high ranking. The canal and road within the delineated source water assessment area contributed to the moderate rankings for VOC and SOC contaminates. The county has high usage rates for nitrogen fertilizer, herbicide, and total agricultural chemicals, which increased the rankings for IOCs, VOCs, and SOCs. The Canandaigua Wine Company is located within a nitrate priority area and the majority of the land use is irrigated agriculture, which both increased the IOCs ranking.

A detection above a drinking water standard MCL or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. This is the case for the IOC susceptibility rating due to the nitrate concentrations above the MCL. The nitrate levels have ranged from 11.4 mg/L to 12.5 mg/L and were detected on the following dates: April 30, 2001; April 26, 2002; and October 10, 2003. According to Rae (2001), the water system also exceeded the new MCL of 10 µg/L for arsenic. In October 2001, the EPA lowered the arsenic MCL from 50 µg/L to 10 µg/L. Public water systems have until 2006 to comply with the new requirement. The arsenic detection also increases the IOC susceptibility rating.

In addition, having sources within 50 feet of the wellhead gives an automatic high score for the type of contaminant in question. This is the case for the IOC and microbial susceptibility rating due to the portable restroom within 50 feet of the well. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0 to 3 year time of travel zone (Zone 1B) and a large percentage of irrigated agricultural land contribute greatly to the overall ranking.

The final susceptibility ranking for the well is high for IOC, VOC, SOC, and microbial contaminants (see Table 2). A copy of the susceptibility analysis for the Canandaigua Wine Company well along with a map showing potential contaminant sources are included with this summary. Information regarding the potential contaminants within the 1,000-foot boundary have been summarized and included in Table 1.

Table 2. Summary of the Canandaigua Wine Company Susceptibility Evaluation

	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory[2]				System Construction	**Final Susceptibility Ranking**			
		IOC	VOC	SOC	Microbial		IOC	VOC	SOC	Microbial
Well	M	H	M	M	H	H	H	H	H	H

[1]H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility
[2]IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical, M= microbial

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

Protection Activities

According to a letter from DEQ (Rae, 2001) the Canandaigua Wine Company well #2 has not been approved and violates Idaho Code, Section 39-118. The water system operator should verify that the violations have been addressed, and that the required coarse of action outlined in the letter has been completed.

For the Canandaigua Wine Company water system, drinking water protection activities should focus on evaluating possible sources of contamination such as those identified in this assessment, especially potential nitrate sources. The Canandaigua Wine Company should post and maintain a public notice detailing the nitrate MCL violations at all potable water facilities, as required by Rae (2001). The Canandaigua Wine Company should also move the portable restroom as far away from the well as possible.

Due to the fact that the arsenic in the well is greater than the level of the revised MCL, the system may need to consider implementing engineering controls to reduce the level of this

contaminant in the water system. The EPA plans to provide up to $20 million over the next two years for research and development of more cost-effective technologies to help small systems meet the new MCL (www.epa.gov). EPA (2002) recently released an issue paper entitled *Proven Alternatives for Aboveground Treatment of Arsenic in Groundwater*, which can be found at http://www.epa.gov/tio/tsp/download/arsenic_issue_paper.pdf. Higher levels of arsenic have been found to be naturally occurring in much of the ground water of southwest Idaho.

During runoff periods, the canal should be monitored to prevent surface water from infiltrating into the well. Working with the local soil and conservation district and Canyon County will better inform the water system of chemicals that may be applied or stored near the drinking water well. The water system operator is also encouraged to develop a drinking water protection plan to document and rank potential contaminant sources, assess protection efforts, and provide education for staff and the public about the drinking water.

Partnerships with state and local agencies and industry groups should be established and are critical to success. Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineation is near residential land use areas. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. There are transportation corridors near the delineations; therefore the Department of Transportation should be involved in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

Assistance

A community must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact Pamela Smolczynski in the Idaho Department of Environmental Quality Boise Regional Office at (208) 373-0461.

Water suppliers serving fewer than 10,000 persons may contact Ms. Melinda Harper, Idaho Rural Water Association, at 208-343-7001 (mlharper@idahoruralwater.com) for assistance with drinking water protection (formerly wellhead protection) strategies.

POTENTIAL CONTAMINANT INVENTORY LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as Superfund is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few heads to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of storm water runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (IDEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100-year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25% of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RCRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by IDEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory

References Cited

Environmental Protection Agency, 2002. Proven Alternatives for Aboveground Treatment of Arsenic in Groundwater, EPA-542-S-02-002.
http://www.epa.gov/tio/tsp/download/arsenic_issue_paper.pdf

Idaho Department of Environmental Quality, 1999. Source Water Assessment Plan.

Idaho Department of Environmental Quality, 1997. Design Standards for Public Drinking Water Systems. IDAPA 58.01.08.550.01.

Idaho Department of Water Resources, 1993. Administrative Rules of the Idaho Water Resource Board: Well Construction Standards Rules. IDAPA 37.03.09.

Rae, Stephen, 2001. Violation of Idaho Code 39-118 Construction of Corus Brands Well #2 without Approval (Canyon County). [Letter to Mike Allen, Corus Brands], 6 July. [Copy in records of IDEQ].

The final scores for the **Canandaigua Wine Company** susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.27)

2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

> 13 High Susceptibility

Ground Water Susceptibility Report Public Water System Name : CANADAIGUA WINE COMPANY Well# : WELL 2
Public Water System Number 3140224 3/29/04 1:55:42 PM

1. System Construction		SCORE
Drill Date	6/23/00	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	NO	
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	NO	1
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	NO	1
Total System Construction Score		6

2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	NO	2
Vadose zone composed of gravel, fractured rock or unknown	NO	0
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	YES	0
Total Hydrologic Score		3

3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high	YES	2	2	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	YES	NO	NO	YES
Total Potential Contaminant Source/Land Use Score - Zone 1A		4	4	4	2
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	3	2	2	3
(Score = # Sources X 2) 8 Points Maximum		6	4	4	6
Sources of Class II or III leacheable contaminants or	YES	6	2	2	
4 Points Maximum		4	2	2	
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	0	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		16	10	10	10
Cumulative Potential Contaminant / Land Use Score		5	4	4	5
4. Final Susceptibility Source Score		14	13	13	13
5. Final Well Ranking		High	High	High	High